irritating. Other editorial aspects also leave much to be desired. The referencing and indexing is not very helpful, even the date to one of the author's papers is wrong. All this may sound rather churlish. Who cares whether some of the data quoted have stood the test of time or not, when one is reading the thoughts of one of the major contributors to the study of the properties of proteins.

The contents starts with thermodynamic fundamentals, and continues with basic treatments of ligand binding to monomeric and oligomeric proteins. Chapters on inter- and intra-molecular forces and solvent interaction complete the basic part. This is followed by some special topics, such as detection and measurement of the statics and dynamics of associations, effects of temperature and pressure, dissociation of protein dimers and biological specificity of ligand binding. Cooperativity is not a major concern of Weber's treatment and he avoids the prevalent confusion of this subject with allostery by ignoring the latter.

Many people will enjoy reading this book and some will be annoyed by it, or parts of it. As for recommending it to graduate students, I would only give it to critical ones with high grades. It will sharpen their wits!

H. Gutfreund

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**Protein–DNA Interactions (Methods in ENZYMOLOGY, Vol. 208); Edited by Robert T. Sauer; Academic Press; San Diego, CA, 1991; xxxi + 700 pages, $90.00, £54.50.**

This recent addition to the above series covers in a comprehensive manner the subject of DNA binding proteins, which play a key role in a variety of fundamental cellular processes, such as replication, recombination, transcription, transposition, restriction, and DNA repair. Published in late 1991, it is exemplary in its up-to-date coverage of the literature in that it is not only replete with references to publications in 1990, but includes a number which appeared in 1991.

The volume is divided into four major sections, as follows: I, Purification and Characterization; II, DNA Binding and Bending; III, Biochemical Analysis of Protein–Nucleic DNA Interactions; IV, Genetic Analysis of Structure–Function Relationships. These include 31 sub-sections which describe most conceivable approaches to defining the nature and specificity of protein–DNA interactions.

Bearing in mind that the differences between specific and non-specific protein–DNA complexes may frequently be quite small and difficult to characterize, particular interest attaches to sub-section 7 on the crystallization of protein–DNA complexes for X-ray diffraction studies. For this purpose the DNA fragments used for co-crystallization with a given protein are initially selected on the basis of analyses of genetic and biochemical data (covered in sections III and IV). The synthesis and purification of these fragments, and the techniques employed for co-crystallization, are exhaustively reviewed. Protein–DNA complexes already obtained in crystalline form, and the conditions for obtaining them, are listed in a Table. A separate sub-section (No. 5) describes the large-scale preparation of DNA fragments for physical studies of protein binding.

The use of multidimensional NMR spectroscopy for determination of the stucture of DNA binding proteins in solution is reviewed in sub-section 6. This approach, already applied to two protein–DNA complexes, the *lac* repressor–operator system and the *Antennapedia*–DNA complex, will undoubtedly provide the impetus for further efforts in this direction. It is rather odd that the pioneer in this field, K. Wuthrich, is also frequently cited as K. Wuethrich (both listed in the Author index), which may confuse some readers.

The use of purine and pyrimidine base analogues for investigating their effects on the structure of model oligonucleotides, and the resultant effects on interactions with proteins, is now fairly widespread. Sub-section 21 examines the effects of a broad range of such base analogues on the specificities of numerous restriction enzymes. While comprehensive in scope, interpretations of results are limited to kinetic analysis of the hydrolysis reactions. The authors might usefully have included some information on the tautomerism, ionic forms, and rotamer conformations of exocyclic groups, of several of these analogues: these factors must play some significant role in recognition by a protein, including a restriction enzyme. Attention might also have been directed to the fluorescence properties of several analogues, which could be useful as probes for following both specificity and kinetics of binding. Complementary to this section is sub-section 23, dealing with specific chemical modifications of proteins as probes for structure–function relationships; and several contributions to Section IV, dealing with genetic methods.

This is a useful volume to have beside one at the lab bench, both for research workers and graduate students. And the detailed Subject Index is a useful adjunct for rapid location of specific topics.

David Shugar

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**Electrophoresis of Large DNA Molecules: Theory and Applications (Current Communications in Cell & Molecular Biology, vol. 1); Edited by E. Lai and B.W. Birren; Cold Spring Harbor Laboratory Press; New York, 1990; x + 156 pages. $34.00.**

The ability to manipulate DNA of megabase size has enormous potential in molecular genetics and there is obvious interest in exploiting to the full the electrophoretic techniques first described by the Carle/Olson and Schwartz/Cantor groups in 1984. The